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USSR Report

TRANSPORTATION

No. 43

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AIR

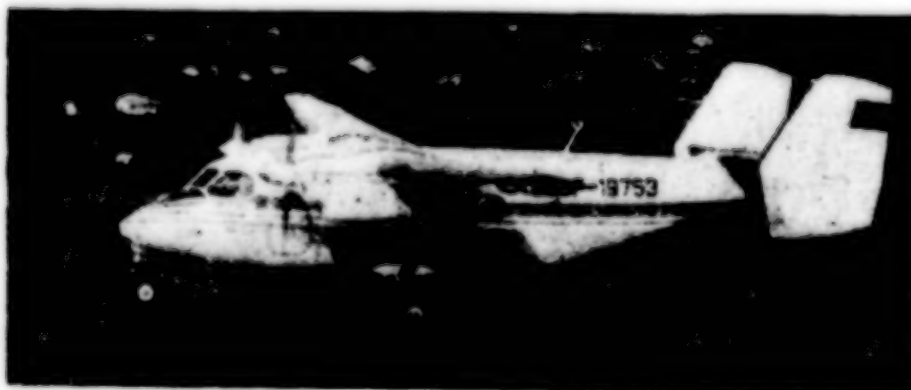
PRODUCTION OF AN-28 FOR LOCAL AIRLINES

Moscow VOZDUSHNYY TRANSPORT in Russian 14 Mar 81 p 1

[Article by V. Shitov: "See You Soon, New 'Anton'!"]

[Text] New aircraft being developed at the design office of general designer O. K. Antonov were discussed in one of our information bulletins. Three years or more passed and, preparing to print the 500th edition of the newspaper, we decided to talk about the forthcoming supplement to the family of "Antonov" aircraft. This time we are presenting the AN-28 aircraft. Here is a photograph of it--a small and even somewhat clumsy vehicle at first glance.

"Clumsy?" A. Zykov, chief of the sector of GosNIIGA [State Scientific Research Institute of Civil Aviation] and the head engineer in state trials of this aircraft, breaks into the conversation. "What are you saying, just look at the specifications of this vehicle. The AN-28 can carry 1.5 tons of cargo or 17 passengers. And its speed is a little more than 350 kilometers per hour--you don't need more for an aircraft of local air lines."



The new microliner will fly the air routes on which AN-2 aircraft are now being operated. And like its predecessor, the AN-28 requires only about 500-600 meters of runway for takeoff acceleration and dirt airfields are also suitable.

The results of testing the AN-28, carried out at GosNIIGA, confirmed the excellent flight and engineering characteristics of the new aircraft. The leading test pilot of the institute V. Shokhin flew many hours on it, checking the aircraft and the operation of its assemblies and mechanisms. The AN-28 is simple to control, fully meets the norms of airworthiness by the radio navigation aids installed on board and is quite accessible for flight by pilots who have not yet gained extensive flying experience. It is quite possible that the flying life of the new aircraft will develop so that it will replace the training AN-2s in civil aviation schools and will become the new "flight desk" for cadets.

6521

CSO: 1829

AIR

BRIEFS

NEW AIR ROUTE--A new air line has been opened between Elista and Tbilisi. This is the 30th large city of the country with which the capital of Kalmykia has been connected by regular air traffic. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 8, Feb 81 p 3] 6521

AIR TRANSPORT--Air transport has been extended during the 10th Five-Year Plan to the Tyumen' Arctic, where six new aviation enterprises have been organized. The fleet of aviation equipment has also been supplemented: modern Il-76, Tu-154 and Mi-10 aircraft have emerged on the line. A large volume of work has been carried out on reconstruction and technical equipping of airports with modern landing and air traffic control aids. Runways with synthetic pavement have been put into operation at Novyy Urengoy, Nefteyugansk, the air terminal at Khanty-Mansiysk, the passenger service buildings at Nadym and Ishim and a number of other facilities. [Excerpt] [Moscow VOZDUSHNYY TRANSPORT in Russian 17 Feb 81 p 2] 6521

DEVELOPMENT OF Il-76 AIRCRAFT--L. Lutoshkin, senior flight engineer of the local subdivision of the Tyumen' Aviation Enterprise comments: When we began to introduce the Il-76 cargo liner, there were sceptics who said that this aircraft would hardly find a place in our kray. But practice has confirmed that the Il-76 not only replaces 10 AN-26 aircraft in its cargo capacity, but one of its flights, for example, to Novyy Urengoy and Nadym airports requires half the time and is half as expensive than transport of the same amount of cargo on the An-26. Moreover, the flagship of the cargo lines can transport heavy equipment and various types of equipment of increased dimensions without preliminary disassembly of it. It is these very qualities of the aircraft that have attracted the attention of specialists of the Sibkomplektmontazh Association, who won the State Prize of the USSR for development of block plans for construction of pumping stations, boiler plants and other arctic structures. Il-76 aircraft now provide delivery of panels year round to the builders of the Tyumen' Pripolyar'ye. Specialization of flights must be carried out during the new five-year plan, distributing and equipping the aircraft individually for shipments of containers, long cargo, self-propelled equipment and nonstandard pallets. [Excerpts] [Moscow VOZDUSHNYY TRANSPORT in Russian 17 Feb 81 p 2] 6521

AIRCRAFT REPAIR--We have organized repair of the Tu-154. We have begun to repair the engines of the Il-62. A new shop for nonmetal articles has appeared at the plant. The internal equipment of the aircraft lounges--ceiling panels, floors and bulkheads--is acquiring a second life and the required joiner's work is being carried out. What event of the past period is primarily recalled? It is undoubtedly

awarding the challenge Red Banner of the CPSU Central Committee, the USSR Council of Ministers, the AUCCTU and the Komsomol Central Committee to our plan, and inscribing the enterprise on the All-Union Board of Honor of VDNKh of the USSR. This was in 1979, but each staff worker will long remember this day. We have all of this. Without being unsubstantiated, I note that a complex system of efficiency and quality control was introduced for the first time in our plant. It has become a rule of our collective to put out full effort. And the plant trade-union committee is not indebted and is concerned about the life and recreation of plant workers. Last year alone, tens of aviators vacationed on the Black Sea coast of the Caucasus and visited Bulgaria and East Germany, Czechoslovakia and Cuba and India and Sri Lanka on trade-union passes. [Excerpts] [Moscow VOZDUSHNYY TRANSPORT in Russian 14 Mar 81 p 2] 6521

CS0: 1829/207

RAILROAD

DIRECTIONS IN THE DEVELOPMENT OF LOCOMOTIVES ANALYZED

Moscow GUDOK in Russian 17 Feb 81 p 2

[Article by engineer G. Muiseev: "The Party Plans--Our Plans"]

[Text] We discuss the CPSU Central Committee draft plan as submitted to the 26th Party Congress--the plan for "Basic directions of the economic and social development of the USSR for the 1981-1985 period and for the period up to 1990."

"To increase within optimum limits the unit capacities of the machines and equipment, while reducing the dimensions and metal and energy consumption and lowering the cost per unit of final result."

(From the draft of "Basic Directions")

How the Locomotive is to Be--The problem of choosing the basic directions of the development of the locomotive equipment is alike worrying both the workers of the railroads and the locomotive builders. Some are interested in obtaining more efficient means of traction and a high degree of operational dependability for them and others want to have a clear-cut long-term program for the development of new technology.

The overwhelming majority of the present-day freight electric and diesel locomotives comprise links of independent sections. They are equipped with a full set of high-powered and auxiliary equipment and they are operated by simultaneous control from one engineer's post.

Predominant in the development of second-generation diesel locomotives is the trend toward replacement of the two-section freight locomotives with single-section ones. In the process of development for this purpose are powerful 6,000-8,000 horsepower units and it is planned to change from six-axle to eight-axle cars. And to service the electrified proving ground some specialists suggest forming electric locomotives exclusively from four-axle sections.

Two essentially different courses have been projected. Some specialists advocate combining the sections so as to cut down the quantity of equipment and reduce the

consumption of metal per unit of capacity. Others believe that we should be guided by the principle of maximum adaptation of the locomotive inventory to the operational conditions.

Who is right?

Because of the increase in capacity and reduction of the specific mass of the power equipment, the diesel locomotives suffer an earlier loss of their adhesion weight potential. Consequently, the operation of large freight trains requires either increasing the number of driving axle, or increasing the axle loads.

But whatever path the locomotive builders take, it is not possible for them to develop a comparable single-section equivalent of the 2TE10V locomotive. Even with an eight-axle car the axle load necessary in that case is excessive. Take the 2TE121 diesel locomotive. Its capacity is more than 33 percent greater than that of the 2TE10V. This provides for acceleration of a rated gradient and increases the weight of the train but only by 600-650 tons. However, to obtain these parameters, an axle load of 26 tons is needed and this requires further strengthening of the track regime.

And will this be costly? After all, a 600 ton increase in the weight of the rolling stock is a long way from meeting the transport requirements for operating the increasing shipments.

We must not lose sight of one other important factor. Speeding up the 2TE121 locomotive by 18 percent altogether and the diesel by 40 percent will reduce the service life of the locomotive by approximately 8-10 years and increase the labor requirements for repair.

Under the circumstances, attaching a third section to the 2TE10V locomotive enables us to increase the weight of the train by 2,100-2,300 tons. Such a locomotive--we will call it the 3TE10V--can be made up from sections which have been well started in production and operation and there is no need to speed up the power equipment. The vehicle will possess good mobility and can be used on most of the sectors of the railroad network.

At the time the creation of the 2TE10L(V) vehicles eliminated the use of the 3TEZ three-section modifications and made it possible at 1,000 horse power of rated capacity to save 17 tons of working weight, to reduce the length of the locomotive by 2.8 meters, and to obtain other advantages. And similar comparative data for the multi-axial vehicles also confirms the calculations made by the developer for the parameters of prospective electric and diesel locomotives suitable for all the sectors of the network. Increasing the axle loads even to 26-27 tons and using the series 2TE121 locomotives (in the quantity of 14-16 percent of the total diesel locomotive inventory) in the next 10-15 years, because of the increased weight of the trains, will not eliminate the need for the use of 18-axle modifications. In light of the continuance of the predominance of the 12-axle modifications, this is evidence in favor of retention of the universal six-axle sections and does not provide any justification for converting the diesel locomotives to an eight-axle car. The figures show that the freight diesel locomotives should be modeled on the basis of a six-axle car with axle loads of 20-21

and 23 tons and sectional capacity of 2,200-2,400 and 3,000-3,300 horse power respectively.

We can thus produce two groups of locomotives: the universal type with unlimited movility adapted in equal measure for train and switching and hauling work and the main line type to serve busy traffic lines.

We think that the time has come to reexamine our policy with respect to switching and hauling diesel locomotives. In such work both among us and abroad there is extensive use of railroad vehicles which have served their time. The use of a single universal model of locomotive for train and switching work will facilitate the maintenance and repair of the locomotives, create more favorable conditions for the specialization of the depots and plants, and make possible additional replenishment and improvement of the technical condition of the freight rolling stock which is operating with a high degree of intensity.

At the electrified proving ground a different picture is in evidence. Unlike the diesel locomotives, the prevailing note here is the use of eight-axle vehicles because the electric locomotives have a higher level of axle capacity and a higher cohesion coefficient.

However, the increase in freight turnover and train weight norms planned for the next 10-15 years is considerably in excess of the actual potentialities of the eight-axle vehicles. If their axle load is increased even to 26-27 tons, they will then be incapable of operating trains of more weight. Without this capability it will not be possible for them to manage the growing freight traffic on the busiest freight-handling lines.

Because of this, it is desirable to enlarge the basic sections and in the production of new electric locomotives to switch from the four-axle to the six-axle car. This will also enable us to improve the weight and dimension characteristics and to eliminate the unwarranted duplication of equipment.

A comparison of the 12-axle locomotives of two and three sections comes out clearly in favor of the two-section variant. The locomotive length is reduced by 12 meters and the expenditure of structural materials by 30 tons. And then the need for such units as traction transformers, rectifiers, high-voltage dischargers, disconnecting switches and several others will only be two-thirds as much. The cost of the electric locomotive is 60-70,000 rubles less and the labor expenditures for repair 15-20 percent less. The starting current for the direct-current electric locomotives is only two-thirds as much, which facilitates the operation of the contact net.

A thorough study of the parameters of the locomotives of the future is one of the important items of the comprehensive program for the further development of transport.

RAILROAD

USE OF LOCOMOTIVES IN LONGER, HEAVIER TRAINS STUDIED

Moscow GUDOK in Russian 26 Feb 81 p 3

[Article by M. Maratsevich, deputy chief of traffic service of the Sverdlovsk Railroad: "The Train of Increased Weight: Experience and Problems--The Optimum Variant"]

[Text] In recent years the Sverdlovsk Railroad has been receiving the new three-section VLII electric locomotives and the eight-section TEM7 switching diesel locomotives. It has also begun replacing the TE3 diesel locomotives with the more powerful modern 2TE116 locomotives in the Yegorshinskiy and Serovskiy sections. This has enabled us to organize the formation, dispatch and operation of trains weighing 3,000 tons from Nazyvayesk to Sverdlovsk and Verkhnetagil'sk as well as long-distance itineraries with the Gor'kovskiy Railroad as the destination. The engineers of the Sverdlovsk and Tyumen' sections have become proficient in the operation of the long trains.

Last year the Sverdlovsk Railroad collective, following up the initiative of the Moscow railroad workers, in all their sectors ran more than 75,000 large-freight express trains and transported additionally over 30 million tons of national economy goods. However, the planned assignment for average weight of a train was not fulfilled. There were several reasons for this. They are the unreliability of the work of the locomotives, especially the electric locomotives requisitioned for the Perm' marshalling yard, the operation in the sectors of a large number of trains of less than full weight, and the empty cars.

Is it possible for us to improve our basic production indicators? Yes, it is possible. In the first place, we need to organize the routing of shipments on a broader scale. And we also need to make fuller use of the capacities of the locomotive from the marshalling station to the station of destination. On the railroad they are still concentrating on fulfillment of the routing percentage while failing to analyze the qualitative yardsticks. That there is an urgent need to amend the norm for the layover of cars at the loading and unloading stations and at the marshalling yards is obvious when a great deal of time is spent for the forming of large-freight trains.

The marshalling stations of our railroad are working at maximum capacity: the number of trains delayed on the approach to us is increasing by the hundreds and the work now being done to re-equip the stations will not solve the problems of

accelerating and increasing the flow of railroad cars through the Sverdlovsk terminal if we do not at the same time also develop it fully. You see, the Sverdlovsk marshalling station and the Sidel'nikovo station have to detach cars from the "6,000" trains which have come from the east and this creates quite a few additional difficulties in organizing the traffic.

With the electrification of the Bogdanovich-Tyumen'-Voynovka sector, it will become possible on the Tyumen' and Iern' runs to go over the transit routes without uncoupling the locomotive at the Sverdlovsk marshalling station. However, operation of these routes on a 1,000-kilometer proving ground requires the setting up of additional equipment points and technical service points [PTO]. Yet the Ministry of Railways order calling for the organization of PTO of electric locomotives at Balezino station has still not been carried out.

Balezino and Kurgana are also lacking PTO for passenger electric locomotives. Nor are they equipped for the servicing of these locomotives at stations Tyumen' and Voynovka. And all the work devolves on the collective of PTO of locomotives at the Sverdlovsk passenger station. This is overloading the railroad terminal, which is already operating with an enormous work load.

But if we replace the main line freight locomotives we have on the railroad with more powerful ones, then the passenger traffic is served by the old ChS2 locomotive, which has insufficient power. Our repeated requests for the allotment of the new ChS6 locomotives to us have gone unheeded. As far as the VL11 locomotives are concerned, they cannot be used in passenger traffic because of the lack of equipment for electric heating and the lack of electropneumatic brakes.

In talking about the formation and running of freight trains of increased weight and length it is not at all coincidental that we should have touched upon "passenger problems." The point is all the trains are operated on the same lines. Any curtailment of their work is at once reflected in the over-all train situation, complicating the already difficult task of sometimes regulating the entire line.

The VL11 electric locomotives which we use to operate the freight trains are powerful vehicles and the very idea of producing them on the basis of the four-axle "halves" of the VL10 electric locomotives is debatable. It can hardly be expected that the three-section 3VL11 vehicle will do much to increase the weight of the trains on the Sverdlovsk-Perm'-Balezino line. An urgent need has arisen to devise and develop a direct-current electric locomotive which has six axles in each section and can be operated in a system of multiple units.

There are broad prospects opened up for us in the forthcoming five-year plan. Each of us, as workers of railroad transport, is obligated to make a critical assessment of what has been done and to constantly look for optimum variants in the utilization of the transport means.

RAILROAD

EFFORTS TO IMPROVE RAILROAD TRANSPORT REVIEWED

Moscow GUDOK in Russian 20 Feb 81 p 2

[Article by N. Isingarin, chief engineer of the Tselinna Railroad: "The Road to Ekibastuz"]

(Text) In the Pavlodar-Ekibastuz territorial industrial complex to step up the extraction of coal and the production of alumina, to continue the construction of the large GRES installations with capacity of four million kilowatts each, and to put into operation the section of the oil refinery.

(From the draft of the "Basic Directions")

Pavlodar--The Ekibastuz complex ships to the west up to 80 percent of the fuel it obtains. And when the fuel reaches our railroad, traffic jams ensue.

The Tselinograd terminal is anticipating a very thorough remodeling and it is not able to handle the train traffic. Also deserving of special attention is the matter of laying second tracks on the Tselinograd-Kochetav line. It is true that because of the inadequate traffic capacity of this line, coal from Ekibastuz must be shipped to the Ural region via a roundabout route through Tobol and Kustanay.

The Ekibastuz terminal also needs development. According to the calculations of the planning institute specialists, the 11 tracks here are now not enough for normal operation; in 1985 there will be a shortage of 26 of them and in 1990 as many as 44. By means of the railroad and the GRES-1 under construction we will this year put into operation several receiving and dispatch tracks but this is, of course, not sufficient. The MPS [Ministry of Railways] and the Tselinna Railroad will undoubtedly henceforth also allocate funds for development of the terminal. But we expect the Minenergo [Ministry of Power Engineering] and the Minugleprom [Ministry of the Coal Industry] to undertake this on a shared participation basis. Unfortunately, in the technical plan approved for the Ekibastuz GRES-1 the section "Foreign Transport," which provided for the installation of additional tracks at the Ekibastuz-2 station, was entirely eliminated.

The ongoing development of the Ekibastuz terminal requires specialists and workers of the mass occupations. And the pace of the housing construction is slow. In the last four years the Pavlodar Transport Construction Trust Pavlodartransstroy

put into operation only 81 percent of the funds allocated to it. In the 1979-1980 period it failed to deliver the two apartment houses of 60 units each and the construction work for a school annex is going slowly. We cannot accept a situation like this any longer.

Having been apprised of the draft of the "Basic Directions," the workers of our steel line are fully cognizant of their responsibility in respect to fulfillment of the task: "To accelerate the buildup of the economic potential of the eastern regions. To accomplish the large-scale work projects for exploitation of their natural resources and development of the fuel and energy and raw material bases in Siberia and Kazakhstan." And to accomplish this task more successfully it would have been desirable to also deal with transport in Section 10 of the draft of "Basic Directions," the section which discusses intensification of development of the construction base as well as housing, municipal, cultural and personal service construction.

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CSO: 1829/167

RAILROAD

DEVELOPMENT OF SIBERIAN RAILROAD ANALYZED

Moscow GUDOK in Russian 8 Feb 81 p 3

[Article by P. Moskalev, rector of the NILZHT (Scientific Institute of Railroad Transportation), Novosibirsk: "The Party Plans Are Our Plans"]

[Text] We discuss the CPSU Central Committee draft plan as presented to the 26th Party Congress on "Basic Directions of the Economic and Social Development of the USSR in the 1981-1985 Period and in the Period up to 1990."

How to Develop the Sredsib [Central Siberian Railroad]--After discussing the draft plan of "Basic Directions, a meeting of our institute's department of "Operation of the Railroads" suggested incorporating in the "Basic Directions" draft the following addition: "To continue the construction and renovation of the Central Siberian Railroad as a basic line linking the Kansk-Achinsk Fuel and Energy Complex (Katek) and the Kuzbass [Kuznetsov Basin] with the Ural region." This principal fuel and energy base of the country will be developed in the 11th Five-Year Plan and in the long-range plan for the period up to 1990. And it is now very important to determine in what directions the fuel obtained will be shipped to the west.

The traditional Trans-Siberian route has to a considerable degree already exhausted its reserves of traffic capacities, although from the standpoint of technical equipment this line is on the most up-to-date level. The thing is every time the Kuzbass obtains a full supply of empty cars difficulties arise not only in connection with the operation of the coal runs from Novosibirsk to Omsk but also in regard to their transfer to the South Ural and Sverdlovsk Railroads. And after all, the Kuzbass will from now on even increase its coal extraction and in the near future the Katek fuel will also be in transit.

With the opening of through movement of trains all along the BAM [Baykal-Amur Main Line], this new line will take over part of the load of the eastern part of the Trans-Siberian line. As far as the western part of the line is concerned, there the BAM in operation will only increase the work load and accordingly the difficulties. Thus it is now, in our opinion, essential to think about how to switch some of the fuel shipments from the main run to the Sredsib. In the last two five-year plans the eastern part of the Sredsib up to the Kuzbass was rebuilt and converted to electric traction. However, many problems are still unresolved there.

We are convinced that the latitudinal course of the Sredsib should begin, not in the Kuzbass, but to the east--in the region of the Katek and the Sayanskiy territorial industrial complex. Under this solution the Kuzbass will obtain a new outlet somewhere in the middle between the Trans-Siberian Railroad and the Mezhdurechensk-Abakan-Taishet line. How exactly this line is to be laid should be determined in light of the new prospective coal deposits in the Kuzbass and the development of the Sayanskiy complex. The proposed eastern branch of the line can also have its own distributing center of the type of the large classification station of Inskoy. This, it seems to us, is the principle of the Sredsib.

In the western direction the transport has been assigned to the Sredsib but the sector connecting with the Irtysh entrance is considered by the Sredsib to be out of the question because further from the entering point the route for the trains remains as before--to Chelyabinsk and Sverdlovsk--along lines which are already extremely overloaded. From Irtysh the Sredsib has its own exit to the west--to Kzyl-Tu, Kokchetav, Kustanay and Kartaly--provided, of course, that it undergoes a fundamental renovation. What they have there now are single-track lines, undeveloped terminals, and diesel locomotive traction. All this also compels the dispatchers to direct the flow of Sredsib trains to the main route. The plan for the development of the line should without fail provide for its own classification center in the western sector too. We believe that it should be built in the area of station Kartaly and it should become a distributing crossroad for a new latitudinal itinerary and the main meridional line for Orsk-Kartaly-Chelyabinsk-Sverdlovsk.

It is quite obvious that the Sredsib must have its own bases for the repair and servicing of the locomotives and cars. The traffic to the east consists largely of empty cars. And consequently it seems desirable to at once build one or two high-powered mechanized points here for repair and cleaning of the flatcars so that they can be turned over to the loading fronts at the sites without any delay. But this has already been spelled out in the future special-purpose program of the Sredsib and a great deal can be said about it. Now something else is more important--to recognize the importance and long-term perspective of the new line, not as an auxiliary line paralleling the Transsib route, but as a basic main line connecting the Katek and the Kuzbass with the Urals and, by the shortest possible route, with the European part of the country.

In any case the Sredsib must not be considered an ordinary line: this main line may have no less importance for the country than the BAM and the Surgut-Urengoy line.

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CSO: 1829/169

RAILROAD

EFFICIENCY SOUGHT IN RAILROAD SHIPMENTS OF FUEL PRODUCTS

Moscow GUDOK in Russian 11 Feb 81 p 1

[Articles in the GUDOK column "Fuel Reports"]

[Text] The railroad workers are these days shipping coal in amounts considerably in excess of the plan. The Donetsk, South-eastern, Moscow, Northern, L'vov, Odessa, Kuybyshev and Krasnoyarsk Railroads are doing a good job with the shipment of this coal. The Kemerovo Railroad has reduced the amount due on its assignment. Not inconsiderable also is the service rendered by the regulation railroads--the Sverdlovsk, the West Siberian, and other main lines of the Urals, Siberia, and the Far East;--which in the first 10 days of February increased the supply of empty cars for the Kuznetsk Basin.

Also delivering regulation open cars above the planned quantity are the Oktyabr', Belorussian, Gor'kiy, L'vov, Southeastern and West Kazakhstan Railroads.

The collectives of many railroads are maintaining a high rate of shipment of petroleum products. The flow here is being provided by the large tank cars of the Moscow, Northern, North Caucasus, Volga, Kuybyshev, Sverdlovsk, West Siberian and East Siberian railroads.

In the first 10 days of February shipment above the plan comprised about 3,110 tank cars of liquid fuel.

[Text] By the Coal Routes--In January the railroad workers of station Izvarino on Donetsk [Railroad] shipped 15,000 tons of first-quality fuel over and above the assignment. The layover of cars was 0.3 hours below the norm.

The success was achieved by virtue of extensive development of intersectorial socialist competition. The railroad workers and the workers of the approach tracks of the enterprises have eliminated the obstacles on the path of movement of the coal. The engineers of the shunting and transport locomotives studied the structure of the approach tracks and are moving the cars successfully.

The workers of related production jointly devised and introduced a common technological process for the work of the station and the approach tracks. It supplied in detail a basis for the production operations and it set forth in clear fashion the times required for their implementation. To make fuller use of the carrying capacity of the rolling stock, 150-ton weights are installed. Now all the cars are weighed locally and additional loads are added if necessary.

Repair and preparation of the rolling stock for loading is well organized. A point for technical servicing of cars has been set up at the station.

Coal is shipped from the station only by direct destination routes. This helps in many respects to accelerate the turnover of cars.

The station duty shift of Ye. Filonenko is retaining a solid hold on first place in the pre-Congress socialist competition. Outstanding jobs on the labor watch are being done by S. Mitronyuk, who makes up trains, Z. Plugotarenko, in charge of receiving and surrendering freight, and A. Sanyuk, duty officer of the switching post.

The railroad workers and the workers of the approach tracks have assessed their potential and have pledged themselves to ship not less than 6,000 tons of additional coal before the beginning of the party congress. Every day they now ship to the consumers at the rate of 500-600 tons of fuel over and above the assignment.

A. Cherepakhin
Special GUDOK correspondent

[Text] "A Sharp Signal--Not A Wise Policy--In recent years station Novopolotsk has been constantly short of tank cars for the shipment of clear petroleum products. To make up this deficit the administration of the railroad is assigning to the washing and steaming station the task of preparing the 100-120 cars needed every day. This means that we must wash the tank cars in which we have been shipping dark petroleum products.

Our collective is well aware of the importance of the task and is doing everything to assure the shipment of the fuel. We are expending our strength and time and electric power. And at this time the managers of stations with a full complement of rolling stock are providing tank cars suitable for the shipment of clear petroleum products and for mazut.

To all our notes the station managers reply "This is no business of yours." But it is our business! We try and we work hard but the crash work comes into play only because of poor organization. It turns out that the right hand does not know what the left hand is doing.

V. Butel'
Tank car preparation foreman
Novopolotsk

[Text] A Saving of 2,000 Cars--Such is the contribution of the Tynda section of the Baykal-Amur Main Line (BAM)--The collective of the Tynda section of the Baykal-Amur-fulfilled the January assignment for shipment of coal to South Yakutia five days ahead of schedule. One-third of the coal routes were along the Little BAM by relay on economized fuel. Since the beginning of the pre-Congress watch about 200 relay runs have now been carried out.

This has enabled them to improve the basic indicator--turnover of cars. Through the efficient cooperation of the workers of all the services this turnover was accelerated by nearly 20 percent in January. The increase in speed en route and in static load has made possible a saving of about 2,000 cars since the beginning of the year.

In these pre-Congress days leadership of the socialist competition has been assumed by the Berkakit station traffic controller, the Tynda car mechanics, the track workers of the Berkakit division, and train dispatchers L. Mironova and L. Minaylova.

The collective of the section has pledged itself to fulfill the two-month plan by 23 February.

S. Kolesova
GUDOK special correspondent
Tynda

7962
CSO: 1829/167

RAILROAD

COMPUTERS IN USE AT CLASSIFICATION YARDS

Moscow GUDOK in Russian 17 Feb 81 p 2

[Article by V. Antonov: "In the Departments and Laboratories of the VNIIZhT (All-Union Scientific Research Institute of Railroad Transportation)--The ASU (Automatic Control Systems) of the Classification Yards"]

[Text] V. Buyanov, a candidate of technical sciences and chief of the laboratory of the computer technology department of the VNIIZhT has been awarded the gold medal of the Exhibition of Achievements of the USSR National Economy for development of the technical and economic justification and the technical assignment for the classification yards' automatic control system (ASUSS) and the justification for the selection of a technical base for the system.

The introduction of the new system makes possible a reduction of the labor expenditures in the technical offices, automated compilation and delivery to the subscriber of the classification sheet and the collated list and documentation for the train to be dispatched. It also guarantees improvement of the quality of the station documentation itself as well as enhancement of the labor expertise.

The automated control system is already in operation at 12 classification yards and by the end of the 11th Five-Year Plan will be in use at 46 yards.

The yearly economic effect of the introduction of the ASUSS has exceeded--for just six classification yards--a million rubles. The number of persons in the service contingent has been reduced by 155.

The ASUSS was developed in close creative cooperation with the collectives of the planning and design technological bureau for ASUZhT [automatic control systems of railroad transportation] of the MPS [Ministry of Railways] and the computer centers of a number of railroads.

7962

CSO: 1829/165

RAILROAD

ENGINEER CITES POOR TRACK CONDITIONS AS CAUSE OF DELAYS

Moscow PRAVDA in Russian 16 Jan 81 p 3

[Letter from Railway Engineer N. Davydov, Moscow: "In Order Not to Delay the Trains"]

[Text] Discussion of this most troublesome problem can be heard with increasing frequency. In the summer months the editors of many central newspapers daily receive dozens of letters with complaints directed against the railroad people, primarily because of the delays of trains. Each specific case has its reasons but I would not be wrong if I say that nearly 50 percent of the disruptions of the traffic schedule happen because of disrepair of the track.

Even to the uninitiated it is clear that the rails are not everlasting. Nor are the crossties on which they are laid. But long before the rails and crossties are worn out there are so-called track disorders. And if the necessary repair work is not done at definite intervals it becomes necessary to limit the speed of movement in the interests of safety. Then the train runs are slowed up and the schedule is disrupted.

The question arises: Is it really so difficult to adhere to the between-repairs time periods? At present, when too many serious problems have arisen in the track maintenance organization of our railroads, this has indeed become a very difficult problem. In the last 25 years alone traffic has nearly tripled but in this period the laying of new rails has only had a 20 percent increase. There is a shortage of materials and repair equipment.

The track workers try to patch the rails in the intervals between trains. But the situation has been aggravated by the fact that these intervals have been reduced to a minimum. Moreover, there are fewer repair workers every year. Often the table of organization for the railway divisions are only 60-70 percent or else 50 percent filled. We have even had arise a phrase like "zero brigades." It means that there is only a brigade leader who looks after the malfunctions which arise in his assigned sector. But he does not have a single track installer--from time to time they are sent to him from other brigades for urgent jobs.

To understand the seriousness of the current situation one must keep in mind that the track installation workers are supposed to perform all types of preventive

repair: finishing off the spikes and tightening the screws, replacing the various defective rails and the unsuitable cover plates and linings, and eliminating the sags and "spattering" of the ballast. There are few mechanisms for this work. There is need to use spike hammers or vibrating electric crosstie tamping picks weighing 20 kilograms. And, of course, the people work in the open air--in heat and cold and rain. The young workers prefer work for the same pay at a machine in a heated shop. So the personnel of the track division consists largely of veterans and women who ought not to be doing the hard labor of the track worker at all.

What is the solution for the situation which has evolved?

The labor of the track worker can be made more attractive by the intensive introduction of highly productive machines and mechanisms. The track installers should repair large sections of track rapidly and proficiently, not under the wheels but in traffic breaks especially provided for in the schedule. That is, it is essential to more rapidly and more vigorously shift the heavy manual labor to the shoulders of the machines. The young people will always be drawn to the equipment and when it comes to the track organization the influx of people to it will increase.

But it is a fact that accomplishment of the task of equipping the track organization is attended by great difficulties. In recent years the scientists and designers have developed a whole series of highly productive machines for full mechanization of the present-day upkeep of the tracks. To organize series production of these machines, is however, far more complicated than the people in the Ministry of Railways [MPS] have suggested. This is due mainly to the unsatisfactory development of track machine-building.

Nearly 20 years ago the pertinent plants of the MPS were transferred to the Ministry of Heavy and Transport Machine-Building. During this time practically nothing has been done by way of development of these plants. Only 30-35 percent of the railroad people's track equipment requirements are being met.

It is especially difficult to obtain the starting of series production of new machines. Back in 1970 they developed the SM-4 snow-removal machine adopted for operation at the centers and stations but the Mintyazhmash [Ministry of Heavy Machine-Building] has still not accepted it for production. The same fate was suffered by the Balashenko soil collector and the ShchOM-3U rubble cleaner. And the secret is that these machines were never made for Mintyazhmash: all the existing enterprises are technically behind the times and are in need of remodeling. But three of the six enterprises have not even begun the remodeling. Nor has the planned construction of a new plant begun. And what has been done for remodeling of the Kaluga and Tikhoretsk machine-building plants has still not yielded any practical results. In the main building of the Tikhoretsk plant imeni Vorovskiy they were supposed to begin in 1980 manufacture of seven types of new machines, including one for individual replacement of wooden and reinforced concrete crossties and for fastening and lubricating the clamp and insertion bolts.

The latter machine is one the track workers are awaiting with particular impatience because it alone replaces 100 workers and increases the labor productivity accordingly. But in Tikhoretsk only the housing of the new production building is ready; there is not a single machine in it.

It is still not too late and it is essential to take urgent measures. First of all, funds must be allotted for the completion of the remodeling of the plants. It is necessary to resolve a matter discussed long ago, the question of setting up in Mintyazhmash a special sector for track machine-building. And this matter should under no circumstance be limited to inclusion of a brief phrase in the "Basic Directions" regarding increasing the production of track machines. I suggest that the following statement be adopted: "To increase the productive capacities of track machine-building so as to provide for full satisfaction of railroad transport's requirements for highly productive track machines and the spare parts for them."

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CSO: 1829/145

RAILROAD

BRIEFS

TRAFFIC OPENED--Bratsk (Irkutskaya Oblast), 15 [Jan]. (PRAVDA correspondent). The track installation crews of V. Dubrovskiy and V. Lakomov have laid the rails of the second railroad line on the hydrostation dam. This opened through two-track movement of trains from Tayshet to Bratsk. [Excerpt] [Moscow PRAVDA in Russian 16 Jan 81 p 2] 7962

BRIDGE COMPLETED--Cheboksary, 13 [Jan]. (PRAVDA special correspondent Yu. Knyazev). After receiving an excellent rating, the bridge over the Oka River in the city of Murom was turned over for operation. This opened a work front for the electrification of the sectors which connect the country's central regions with the Volga and Ural region, where diesel locomotives are now in operation. [Excerpt] [Moscow PRAVDA in Russian 14 Jan 81 p 1] 7962

NEW FREIGHT TRAFFIC ROUTE--Just opened is regular movement of freight trains in the Urgal--Berezovyy--Komsomol-on-Amur sector. The route makes possible unloading for the Trans-Siberian Main Line of a considerable portion of the goods originating in the country's western regions to be shipped to the Magadan, Kamchatka and Sakhalin regions. The line will now be supplied by a shorter northern route. Already this year the railroad workers of the eastern sector of the BAM [Baykal-Amur Main Line] are tasked with the shipment of millions of tons of national economy goods. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 6, Feb 81 p 3] 7962

NEW RAILROAD LINE--Report from a front line--The Altay Main Line--The state commission has put into operation the new railroad main line from Malinovoye Ozero to Lokot'--The 111-kilometer steel line will accelerate the transportation of passengers and national economic freight to Kazakhstan and the southwestern Altay regions and will unload on to the Trans-Siberian and Central Siberian lines. It has thus furnished the last link in the Barnaul-Kulunda-Lokot'-Barnaul triangle, which connects by the shortest route all the railroads of Siberia and the celebrated Turksib [Turkestan-Siberian Railroad]. [Excerpt] [Moscow TRUD in Russian 21 Jan 81 p 1] 7962

BRIDGE TRAFFIC OPENED--Under difficult weather conditions two weeks ahead of schedule they have completed the replacement of the span structures of the 155-kilometer bridge in the Kiev-Korosten' sector. Traffic on the bridge has been opened--P. Vasil'yev, chief engineer of the railroad section, Korosten'. [Excerpt] [Moscow GUDOK in Russian 3 Feb 81 p 1] 7962

RAILROAD FACILITIES IMPROVED--Not too long ago there went into operation the electrical centralization of the switches in the A and B yards of the Ekibastuz-1 station. Reconstruction has been completed on the central office, where several receiving and dispatching tracks have been added to the existing line. The B yard of station Ekibastuz has also been converted to electric centralization. There they have begun to operate three receiving and dispatching tracks and six switches. The blockhouse and the prehump yard have been fully converted to electrical centralization. The reconstruction of the main coal loading center of the Tselinna line was completed exactly a year ahead of the planned time.--L. Turov, GUDOK correspondent, Ekibastuz. [Excerpt] [Moscow GUDOK in Russian 3 Feb 81 p 1] 7962

CSO: 1829/169

PROGRAM NEEDED FOR AUTOMATION

Moscow MORSKOY FLOT in Russian No 2, Feb 91 pp 48, 51

[Article by Candidate of Technical Sciences A. Pashkov]

[Text] With each year, the influence of the automation of ships on the activities of all maritime specialists becomes more evident. This explains the general interest evoked by the journal's return to a discussion of the problems of the automation of ships.

The first article by S. Dranitsyn (MORSKOY FLOT No 5, 1979) reads as though the direction of such a discussion is predetermined. Automation, however, necessarily is to be considered as an integrated system in which the formulation of the problems and the ways of solving them are based on clear determinations of the essentials of the place and significance of automation in the development of the fleet.

Automation in the fleet came out of a research and experimental status, and, at a certain stage was made official in the form of specific requirements by the classification societies, including the USSR Register of Shipping. To some extent, however, the use of the very term "automated ship" seems groundless if what is meant, basically, is automation of the machinery plant. Automation of the process of navigation, clearly, has not kept pace. And among mooring processes, so far, only the tensioning of the mooring lines and some other operations have been automated, but automation does not envelop the mooring process completely. Another example on this same line is found in the status of automation of cargo handling operations on dry-cargo ships, while on tankers this problem is practically solved. Automation can come to an end only with the creation of a ship on which all working processes are fully and completely automated; that is, only with the creation of an automatic ship. All other levels and extensions of automation are intermediate steps, and their fixation or limitation by a regulatory document can be harmful by turning them into a factor which represses the development and introduction of new ideas and technical solutions.

It seems that by including it in the Rules of the USSR Register of Shipping, a method of freezing the level of automation can be considered as having been justified. A timely reexamination of these requirements will favor further growth of the level of automation.

In all probability, the greatest attention in work on the automation of the fleet needs to be paid to the development of a systematic long-term program, the elements of which are then to be included in the Five-Year and annual plans for scientific research. One of the important problems in the program is the assurance of uniformity in the automation of the different shipboard technological processes.

The development of equipment and its automation gradually released crew members, at first from the engine room crew, from the operation of machinery, and has increased the proportion of work on maintenance. Initially, this maintenance was done within a watch, but later on, special subunits were separated out. The work of the crew on maintenance went from a secondary task to the foremost job, to preventing what had made for long layovers of ships in port. It is not obligatory, however, to take this into account in long-term studies because it is a temporary effect which is confirmed by the increase of the number of specialized ships, new kinds of transportation systems, the growing intensiveness of cargo operations in ports, new methods of controlling the movement of the fleet, and so on.

On automated ships, almost all of the functions of the watch in the machinery plant are carried out by automatic devices. The engine room crew, sharply reducing the numbers on watch, was able to increase the amount of maintenance work, allotting for it a significant part of its staff which began to work, not on a watch basis, but on a shift basis. At the same time, members of the deck crew certainly have not become aware of the results of automation to a similar degree. What is more, the transfer of control of the power plant to the bridge has even somewhat increased the work of the navigating watch. Consequently, subunits for the operation of equipment or for maintenance have not been formed from the deck crew. It could not separate out individual members of its staff for maintenance, but only a part of the working time of some of them. This gave rise to some complications in the understanding and interpretation of the roles and duties of the different departments in the crew. Thus, the higher the level of automation, the more distinctly must the specializations of the crew members be established according to the new functional assignments for the operation or the servicing of shipboard equipment.

In defining the workings of technical operation, it is necessary, on the one hand, to note that a ship, although a large and complicated assemblage of different systems, is a single structure and its technical operation, in all probability, necessarily is to be concentrated and carried out according to a unified method. On the other hand, technical operation is a component part entering into the general system of operation of the ship, including the commercial, navigational, and other kinds of operation which makes obvious the rationality of concentrating all of them into one department.

The new role of the department of operation obviously will require substantial additional training of specialists. In my opinion, the condition of the training of machinery specialists can be considered as the most satisfactory; however, even here, it is necessary to increase the knowledge of supervisors in electronics, automatic devices, and special technology. The introduction into the composition of this department of specialists in the repair of automatic and electronic equipment is also possible.

The new distribution of duties can be accomplished in full measure on modern automated ships where the crew has been freed from the task of operating equipment to a significant degree. On ships with lesser degrees of automation, it is certainly necessary to retain, partially, the functioning of one department in the duties of another while clearly defining this by suitable shipping company documents.

The department of technical operation on modern ships is not large. The further further automation of shipboard equipment, obviously, will not cause a marked reduction in the department, and it will retain the watch system of work.

While maintenance still is very little automated, the means for automating it already are taking shape. These are the continuous automatic diagnosis of all elements of ships, the development of a theory, and the creation of means for finding leaks, damage, electrical shorts, etc. Experience permits the inference that the main mode of work in this department will be in shifts with allowances, of course, for shipboard peculiarities such as operations requiring all hands and the dependence of some operations on navigating conditions and so on. The composition of the department is determined by the reliability of shipboard equipment, by the adopted methods of servicing it, and by the form in which the servicing is provided. A growth in the reliability of individual elements is indisputable; however, the complexity of shipboard systems is being increased simultaneously which demands a careful evaluation of the labor intensity of maintenance. As regards the method of maintenance, the accepted system of planned preventive maintenance according to averaged indices, until its replacement by a method of individual diagnosis, does not permit anticipating a substantial reduction in the volume of maintenance work.

The question of the distribution of work on the maintenance of shipboard equipment among the departments of a ship's crew and shore bases of different capabilities is most complicated at present because there are insufficient data for its solution. A deep investigation of this problem obviously will lead to more effective ways of solving it which will not be identical for all stages of automation and must be changed along with its level of growth.

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ADDITIONS TO THE MERCHANT FLEET REPORTED

Moscow MORSKOY FLOT in Russian No 2, Feb 81 pp 41-44

[Article by O. Shebarskiy, director of the supervisory group of the Ministry of the Maritime Fleet at the Vyborgskiy Shipyard: "The Container Ship 'Captain Sakharov'"]

[Text] The ship "Captain Sakharov" was designed on the basis of the plan for the "Sestroretsk" series of container ships, which were built during the years 1972--1973. Incorporated into the changes made in its design were those regulations of international agreements which have gone into effect since the time when the "Sestroretsk" series of container ships was built, as well as the experience of the Far Eastern Steamship Company with regard to increasing the carrying capacity of ships due to increasing their space available for containers.

The diesel ship "Captain Sakharov" is a single-screw, four-hold, single-deck, fully-assembled vessel, with a lengthened fore-deck and quarter-deck, with the engine room and living quarters located in the stern, with an inclined stem, a cruiser-type stern, and a transom above the waterline. The ship was designed to carry cargoes in the northern and moderate latitudes of 20- and 40-foot-long international-standard containers, using the vertical method of loading them. The ship's holds have been equipped with compartment-type structures for packing in the containers. Provisions have been made for the possibility of carrying 20 refrigerator-type containers on the deck.

This ship was built for the USSR Registry Class KM  UL  A2, and it meets the requirements of all the basic international regulations and conventions.

Principal Characteristics of the Ship

Length:

Maximum	130 m
Between perpendiculars	119 m
Maximum beam (width)	17.3 m
Height of board (side, at midship)	8.5 m
Draught at load line	6.9 m
Water displacement under draught at load line	9,980 t
Available space for 20-foot-long containers	
In the holds	153 units
On the deck	167 units
Prolonged operating capacity of main engine	4.49 MWt

Speed under full load	16 knots
Sailing range.	6,500 miles

Unsinkability is ensured when any one compartment is flooded in all specified cases when the ship is over-loaded. The ship has been provided with a heeling-ballast system for controlling stability before setting out on a trip by the method of simplified heeling. In order to ensure the ship's stability when three tiers of containers are being carried on the deck, as well as an emergency stability, 470 tons of cast-iron-concrete ballast are placed between bottoms; such ballast has practically no effect on the ship's carrying capacity, since in the overwhelming majority of cases the actual load of the containers being carried does not exhaust the ship's full cargo-carrying capacity.

In its midship section this vessel has a double board, which at the present time has become the norm in designing ships with a great deal of exposure of their cargo holds. The dry sections formed by means of the double board ensure an increased viability for the ship. In order to better satisfy the requirements of the International Convention on Preventing Marine Pollution from Ships, the traditional ballast-fuel tanks were rejected in the design of this ship. The ballast and fuel systems were made separate, which releases the crew from the risk of throwing overboard fuel remnants from the pipelines of the ballast-drying system during the pumping overboard of ballast waters in cases where the ballast-fuel tanks are utilized as fuel tanks. The crew is also released from the extremely labor-consuming work of cleaning the ballast-fuel tanks when their purpose is changed.

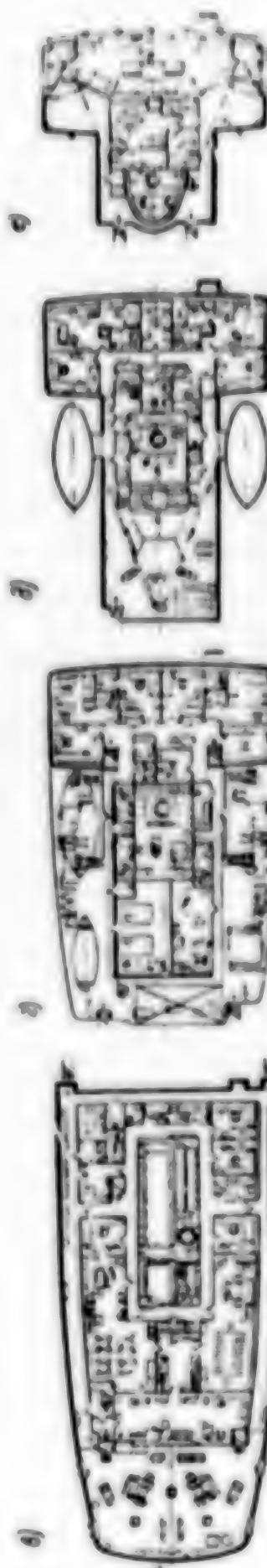
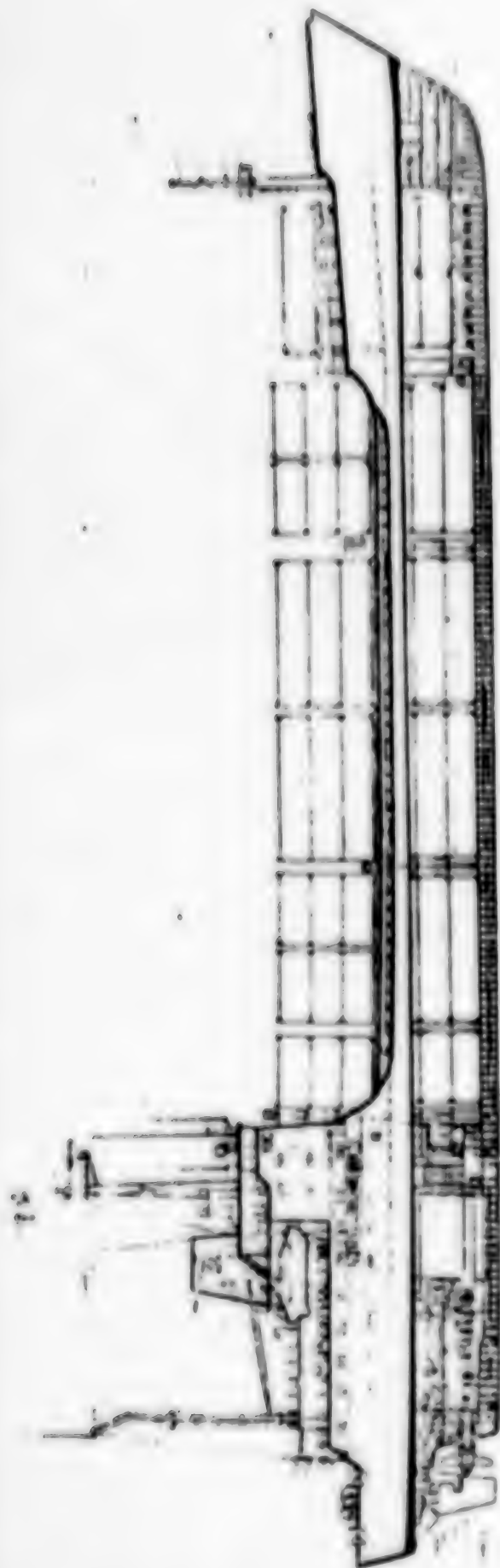
The ship's hull and superstructure have been made all-welded of shipbuilding high-carbon and low-alloy steels. The hull was designed for a compound system of assembly. The upper deck, the second deck, and the bottom--for the longitudinal system of assembly; the board /side/ for the latitudinal method. In the bow and the stern extremities a reinforced assembly was used, corresponding to the ice-breaker class of ship.

A B8 electric windlass /capstan/ has been installed on the ship in order to hoist the Hall-type anchors, weighing three tons each. The windlass is controlled from a command control point installed on the fore-deck. Remote-controls to indicate the length of chain paid out have been installed on the windlass and in the deck-house. Provision has been made for the possibility of letting out special-emergency anchors from the deck-house.

The R16 electro-hydraulic steering mechanism with the A1st automatic helm allows the semi-balanced helm /rudder/ to be reset from one side to the other during a period of nine seconds.

Two enclosed lifeboats have been installed on the ship; they are motorized launches made of ZS3hR2-M with a seating capacity of 55 persons each and two inflatable life-rafts with room for 10 persons each.

The mooring gear consists of four (two each on the fore-deck and quarter-deck) electric winches made by the polish firm of Towimor, with steel cables and automatic regulation of the traction force. Moreover, windlass turrets are used for mooring operations.



General Plan of the Ship: a) --Side View; b) --Upper Deck; c) --Quarter-Deck; d) --Boat Deck;
e) --Lower Bridge; f) Running / Working / Bridge

The ship is equipped with loading apparatus only operational service and repair facilities, namely as follows: for lowering and hoisting the utility launch, for loading in provisions and taking heavy parts out of the engine room. Two booms with a hoisting capacity of 1.5 tons each have been installed on the boat deck and at the mizen-mast. The loading and unloading of containers, as well as the opening and closing of the cargo holds must be carried out by shoreline equipment. There are special hoists for lifting people onto the containers which are being carried in the deck.

A 5DKHN 62/140-3 engine has been installed in this ship; it is produced by the Bryansk Machine-Building Plant, as licensed by the firm of Burmeister and Wein.

The auxiliary electric-power unit consists of three A.C. three-phase diesel generators with a capacity of 320 kW, driven by four-cycle, six-cylinder engines with a 64 H 25/34 turbo-pressure charger with a capacity of 361 kW each. Provision has been made for the lengthy parallel operation of any two of them at the same time. There is also an emergency diesel generator with a capacity of 100 kW. The distribution of electric power is accomplished through a feeder-group system. Herein the power consumers are fed by a current with a voltage of 380 V directly from the main distributor panel, while the galley electrical equipment and everyday appliances as well as the network of the principal and emergency lighting are fed by a voltage of 220 V from three step-down transformers. The ship's entire needs for electric power (with the exception of summertime air-conditioning) are furnished by one diesel generator.

The main engine, auxiliary machinery and apparatus of the electric-power plants, as well as other machinery and apparatus installed in the engine room, require manual servicing no more often than once every 24 hours.

The engine room is equipped with a central control column (TsPU), located on the platform on the left side. Placed on the TsPU are control boards for operating the technical means of the Shipka system, mimic-flowsheet panels of the main electric-power unit, and auxiliary mechanisms. Also located on the TsPU is the main distribution panel of the ship's electric-power plant. Control of the main engine is provided for from two columns: the remote-control, automated column (DAU), from the deck-house and the pneumatic remote-control control (DU) from the TsPU. The DAU system named "Grom" has two programs: a normal one and a special emergency one in case of a breakdown situation. By means of each program the DAU system ensures the startup of the main engine, the change in the cycles of its operation, reversing, and automatic passing through the zones of critical revolutions. The DAU system has a reversograph attached; it carries out the automatic registration of commands being given to the main engine, as well as the registration of their execution. The first models of the Soviet "Grom" DAU system were installed on ships in 1978.

Control of the status of the main electric-power plant and the auxiliary machinery is carried out by the Shipka-ID system, which performs the following functions: continuous monitoring of the operating parameters of the machinery; light and sound signalling of any deviations from the norm in the parameters being monitored; automatic startup of reserve pumps, ensuring the operation of the main engine; remote-control startup and stopping of auxiliary machinery; monitoring the presence

of the watch officer at the TsU, and in case of his absence for more than 30 minutes, announcing this by light and sound signals.

The complex system of automating the main electric-power plant ensures its servicing while the ship is in motion from the TsU by a signal watch officer uninterruptedly for a period of 16 hours. While the ship is at anchor round-the-clock operation of the machinery is permitted without the needed presence of a watch officer in the engine room.

The ship is equipped with the following fire-extinguishing systems: water, foam, Freon, as well as carbon dioxide for extinguishing a fire in the housing of the main engine, utility boiler, smoke-exhaust boiler, or in the diesel-generator dampers.

Performing the requirements with regard to preventing marine pollution is ensured by cleaning the running water by means of SK-2.5 separators, and the sewage-flush water by means of the LK-50 bacteriological unit of Polish production. As a reserve, the ship has independent tanks for collecting running and flush water with its subsequent transferral to a collecting tank or to shoreline cleaning stations.

The makeup of means of navigation and radio communications installed on the ship is determined by proceeding from the conditions of ensuring the safety of ocean navigation in accordance with the requirements of the Regulations on the Conventional Equipment of Seagoing Ships.

This ship has 12 single cabins for the officers, of which six are of the improved type. The crew is placed in double cabins. All the living and social areas are equipped with a system of winter and summer air conditioning. The ship has a sports complex, located in a special cabin, which is furnished with the necessary sports equipment.

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OCEAN AND RIVER

CARGO SHIPMENTS BETWEEN USSR, LIBYA

Moscow VODNYI TRANSPORT in Russian 24 Mar 81 p 1

[Article by Yu. Lukasik, special correspondent: "Line Service Maintained by Ro-Ro Vessels"]

[Text] The Berdyansk--Misurata (Libya) line is being maintained by three vessels of the Sea of Azov Shipping Company. The goods of Soviet foreign trade associations are traveling in one direction, and empty containers and ro-ro trailers in the other. A distinctive feature of the line is that the crews themselves unload the vessels in Misurata. This has been set forth in the relevant contracts.

This peculiarity requires of the seamen the ability to drive buses, truck tractors, lift trucks, excavators and farm tractors--practically any equipment. In other words, they need to be drivers who can drive anything. On all the shipping company's ro-ro vessels a vigorous process of training seamen to drive a wide variety of equipment has been going on since these vessels were received from the shipyard--in the middle of the seventies. It is no accident that most of their crew members have qualified as longshoreman machine operators.

Nor is the crew of the ro-ro vessel "Akademik Artsimovich," one of the diesel vessels operating on the Berdyansk--Misurata line, an exception in this regard. Yet it is still not possible to learn to drive the entire range of different equipment. There is always the demand, therefore, for resourceful people who can quickly learn to drive an unfamiliar vehicle.

Among the cargo which the motor vessel delivered to Misurata on the last trip was a cutter-wheel trencher. There was a hangup in the unloading operation: the motor would not start. S. Shteyn and S. Vysotskiy, machinery electricians, determined the cause--the batteries had lost their charge. A. Shakhunov, ship's electrician, charged and replaced them. The motor started!

Then A. Shakhunov drove the excavator out of the hold. Of course, it is no accident that it was Anatoliy Fedorovich Shakhunov, a member of the party, who did this. He is one of those resourceful people so needed in the crews of ro-ro vessels. Many people have had basic theoretical training and therefore have a good idea that any crawler machine has a clutch, a gas lever, and so on. Wheeled equipment will have an accelerator pedal, a brake, and so on. The basic principle is

well-known and clear. But in practice the equipment is always different, and every time one must learn all over again. And there are no textbooks or manuals or specialists on the ship. That is when the Shakhunovs come to the rescue.

Of course, on the next trip all the complications have to be analyzed--the seamen learn from them. Many read specialized journals--this also helps considerably. Consequently, there are now more and more people in the fleet who can be referred to as equipment-operator seamen or longshoremen-seamen. And in future such specialists might be altogether capable of completely loading and unloading their vessels in ports of loading and ports of delivery.

To that end it is obvious that even today courses are needed for seamen to study the equipment they will be carrying. The question of supplemental remuneration is being put on the agenda--so far everything is being supported by people's enthusiasm. Of course, the seamen should also obtain the relevant certificate for this.

Here are some of the questions that have been raised by the operation of the "Akademik Artsimovich" on the Berdyansk--Misurata line. The crews of the vessels are not at all bound by precise dates of arrival in port. Rather it is a matter of the shipping company being required to send to Misurata a certain number of motor vessels each month.

"The navigation presents no particular problem for me, since I am an ice captain," says Valentin Petrovich Shevchenko, who is substituting as captain of the "Akademik Artsimovich." "Yet navigating a ship here is not easy. The vessel's rather high speed--16.5 knots, heavy traffic in the straits, in the Aegean Sea and in the Sea of Marmara make the trips more strenuous."

The "Akademik Artsimovich" maintains constant radio communication with the other vessels on the line. V. Shevchenko radios I. Kozlov, captain of the ro-ro vessel "Znanya Oktyabrya" from the Black Sea, asking him:

"How is the situation now in Misurata?"

"Don't hurry, we are unloading. The weather is bad, we cannot unload normally."

The "Akademik Artsimovich" cruised to Misurata at economical speed, conserving fuel. Later, when they were on courses that brought them together, I. Kozlov radioed:

"Valentin Petrovich, be mindful that there are 40 empty ro-ro trailers awaiting you. Take care that the papers are filled out for them."

"Thanks, Ivan Ivanovich, thank you, understood."

The seamen also have a duty to strive to return the empties on time to the Berdyansk Commercial Seaport, then there is less layover time in the Soviet port. On the last trip they were able to pick up the containers and ro-ro trailers on time.

The crew of the "Akademik Artsimovich" has been successful in fulfilling the socialist obligations it assumed. It is no accident that there are no outstanding complaints against this ship in the No 3 KhECS [(?) cargo shipping traffic department], of which this ro-ro vessel is a part. Today the seamen, enthused by the decisions of the 26th CPSU Congress, are striving to respond with deeds to the concern of the party and government for development of the merchant marine.

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MISCELLANEOUS

IMPROVED INTEGRATION OF TRANSPORTATION SYSTEM URGED

Moscow PRAVDA in Russian 6 Jan 81 p 3

[Article by A. Kaltakhchyan, associate professor of Moscow Institute of Railway Transport Engineers]

[Excerpt] The development of transport cannot be separated from the needs of the production which it services. All plants are interested in the fact that their supply and also export of finished products be accomplished rapidly and economically. However, contacts between industrial enterprises have now been organized so that transport is forced to haul millions of tons of the same freight in both directions. Covering extra thousands of kilometers, products produced by a neighbor are frequently delivered to the plants.

Sometimes the product is unloaded excessively frequently enroute from the rail cars and trucks and is again loaded into them, "passes through" tens of warehouses and different bases and is reshipped many times from place to place. And this is accompanied by high losses of the product and energy expenditures. Thousands of people and an enormous amount of equipment are working essentially without benefit and obstructions of the freight traffic flow occur.

If one takes into account that all enterprises depend in one way or another on each other, then effective exchange of products between them can be organized only if they are regarded as a unified system of mutually linked related plants and if an efficient system of freight traffic volume is developed. I feel that the problem should be solved in a centralized manner, without looking at agency "fences."

The work which transport must carry out will then look differently. The volumes of shipments and also the need for transport facilities, loading and unloading machines and warehouses will be reduced by hundreds of millions of tons. Until we achieve this, I feel that different measures of transport development will hardly be beneficial to the country. Therefore, I propose that the following sentence be introduced in the second section of the draft of the Basic Directions: "Develop an efficient statewide flow of freight traffic volume in the country."

It is most important during the new five-year plan not to place bets on individual enterprises that are insufficiently linked to each other. For example, whereas the greater part of allocated funds are directed toward a mass increase of the number of tracks between railroad stations, the enormous expenditures on this will overlap the advantage achieved many times. Why? Because one has to wait too long

for the necessary results. And the main thing, freight will arrive at the customers as before on the same low-capacity railroad platforms which are now more similar to "sleepers" for rail cars than to places where they should be rapidly loaded or unloaded of freight. Hundreds of thousands of rail cars at them will still stand idle for days. And it is difficult to achieve the final goal--timely delivery or export of freight.

We feel it is more feasible to significantly increase the funds directed toward providing the railroad with large-capacity cars and modern powerful locomotives, to widely introduce consolidated loading of articles and to sharply reduce the time that transport equipment stays at industrial enterprises. This will permit more heavy trains to be made up and will reduce the total need for rail cars.

Elimination of excess work, use of heavy trains consisting of capacious general-purpose and specialized cars with automatic unloading and an intensive increase of loading-unloading capacities would make it possible within short periods to appreciably raise the real carrying capacity of railroads without immediately losing the country's entire track facilities in construction timber.

Where station tracks can be lengthened for passage of long-car trains and how many tracks can be constructed on waysides are problems that can more accurately be solved as a result of fundamental ordering of economic ties. This measure alone will make it possible to eliminate tens of thousands of trains from circulation that are now engaged in excessive counter shipments.

There is yet another reserve--shipments which it is simpler and more advantageous for other types of transport to carry--truck, water, air and pipeline--must be decisively removed from the railroad.

To improve the operation of transport as a whole, the number of enterprises at locations of woodworking and other raw material processing, or concentration and preparation of various types of materials must be increased and complex development of economic regions and automation of transport management must be carried out more rapidly.

I feel it is especially important to raise the efficiency of loading-unloading and transport-warehousing operations. If rail cars and trucks are loaded and unloaded and if warehousing, storage and intraplant handling of goods are carried out rapidly and with quality, transport will cease to be a "bottleneck" of the national economy.

But basic and extensive rearrangement and a change of the existing views on the transport process are required for this. For example, how can highly productive shipment of products be achieved at junction points of various types of transport and at industrial enterprises if they continue by custom to construct obsolescent and expensive transloading warehouses there? Advanced technology frequently cannot be used in them and the use of manual labor is frequently still provided. It is felt that our efforts should be directed toward developing a unified statewide network of automated transloading bases, docks and industrial freight fronts. Elimination of product losses en route and a sharp reduction of the idle times of rail cars, trucks and ships depend largely on this. Enterprises which would serially manufacture automated warehouses for handling and storage of all basic goods

are required. Moreover, there should be a full complement of facilities with all hoisting transport and other equipment and automated control systems.

The freight shippers and consignees, frequently acting in an uncoordinated manner, arrange equipment for themselves which is related to different systems of machines and is designed for different methods of work, types of rolling stock, weight and dimensions of freight. It is understandable that, receiving products from each other, the enterprises sometimes have difficulty in unloading it. This occurs, for example, when the construction organizations send packages weighing 10 tons for three-ton cranes or when unit products unloaded in bulk arrive.

In order that freight handling proceed successfully, only a quite specific set of interrelated advance technologies should be used in the national economy. The compatibility of the technologies of handling complexes, bases and docks throughout the entire national economy must be provided. It is important in this case to combine in a single program the development, manufacture and disposition of hoisting-transport and other equipment. Inclusion of this program in the draft of the Basic Directions would permit transport to proceed in step with development of the entire national economy.

Mechanization of freight handling at warehouses and in loading-unloading of freight cars, trucks, ships and also in intrashop and intershop transport must be accelerated significantly during the new five-year plan. Taking this into account, I feel that it is important to include the following sentence in the second section of the draft of the Basic Directions: "Provide for linkage and complete mutual conformity of an increase of carrying capacity of transport to an increase of loading and unloading capacities."

Transport is the engine of the economy. Only careful selection of methods of developing it will make it possible for thousands of enterprises of all sectors of the national economy to operate much more rhythmically and reliably.

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MISCELLANEOUS

DESCRIPTION OF TRANSPROGRESS SYSTEM

Moscow MOSKOVSKAYA PRAVDA in Russian 7 Mar 81 p 3

[Article: "The Wind Drives the Trains"]

[Excerpt] The air masses have already been put into operation at the experimental base of the Transprogress Special Design Office. Racks of thick pipes extend alongside the shop. The wind is also working in these steel corridors. The "Start" button was pressed. Powerful compressors roared, forcing compressed air into the pipes. With strong pressure, it moved a train of containers from the spot, each of which is similar to a coil in shape. And now the train driven by an elastic flow rushed inside the pipes. The length of the mainline may be short--a little more than a kilometer. But if necessary it can be considerably longer. Several of these systems are already operating in our country. For example, crushed stone is delivered from the quarry to the concrete plant in Georgia through a pipeline more than 17 kilometers long. And this is only the first unit. The mainline will be extended considerably in the future. Container pipeline transport has already achieved production addresses at other points as well. Experimental systems have now been installed at Leningrad, Volgograd and Tula. Plans for more than 60 of these construction projects are now being created.

Unlike other types of transport, pneumatic container transport has many occupations. It can be called general-purpose. Judge for yourself. It is easy to deliver ore from quarries to concentration plants and to deliver the ore concentrate from there to metallurgical enterprises through a pipeline. It can transport billets from one shop to another. Garbage and household wastes can be removed from apartment buildings to special processing plants. And the designers will probably in the future develop equipment even for passenger routes. There is nothing unrealistic in this. The potential capabilities of the new transport suggest the widest use.

Even the air lines, not having any obstacles at all at altitude, still need to make turns during flight and to deviate from a strict straight route during take-off, landing and even en route. Railroads and trucks require installation of special mainlines. Moreover, numerous obstacles force one to construct roads along other than the shortest route. But pipeline transport will deliver goods in a straight line, passing across major highways and rivers.

Are the forces of the "wind" adequate to deliver heavy containers?" It turned out that its capacities are quite sufficient to move trains with rail cars, each of

which weighs up to five tons. But light freight must also be transported. In this case pneumatic transport is the most economical, requiring insignificant air pressure and minimum energy consumption. Such mobility in selection of the most economical mode of operation cannot be claimed by any other type of transport. Incidentally, its speed indicators can be easily varied as needed: from 20 to 60 kilometers per hour. A container pipeline can operate continuously.

A full-scale mockup of a system which will first be registered in Moscow has been installed at the Transprogress experimental test area. Pneumatic transport will assimilate yet another occupation--librarian. Equipment for pneumatic container delivery of books from the repositories to the reading rooms of the State Library imeni V. I. Lenin is being tested. Now in order to receive requested literature, one must wait 20-40 minutes until it is brought from the stacks. The new system will reduce this time to one minute. The total length of the track will comprise about five kilometers. The new transport specialty has left an impression on its external appearance. The pipeline is made rectangular for book format. There is yet another Moscow address for the innovation--Krylatskoye. A centralized vacuum system for removal of household wastes will be constructed here. And in the future pneumatic container transport will be registered at industrial enterprises, construction sites and in city management.

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MISCELLANEOUS

BRIEFS

GAS PIPELINE CONSTRUCTION--Noril'sk, 30 Jan 81--The gas builders of Taymyr have purged and tested under conditions of the Arctic winter the complex, just prepared section of the third Messoyakha-Noril'sk gas pipeline. The blue fuel of the Messoyakha field has been brought 38 more kilometers closer to its customers. The greatest barrier for the pipe layers were not cold, since the winter was comparatively warm this year, but unusually frequent winds and abundant snowfall. But the system which they introduced for protection of the gas artery against bottlenecks and "clots" was stable and reliable. [Text] [Moscow PRAVDA in Russian 31 Jan 81 p 1] 6521

OIL PIPELINE CONSTRUCTION--Checking the work of the major Druzhba oil pipeline on the 700-kilometer Mozyr'-Brody-Uzhgorod section has been turned over to a computer. "The use of electronics is especially effective on the route in the Carpathian mountains where there are many difficultly accessible regions with steep drops," said the manager of the section of the automated control system for production processes of the Administration of Druzhba Major Oil Pipelines A. Dmitruk. "The computer 'interrogates' all technical facilities every 15 seconds by using remote control sensors." The experience accumulated on the steel arteries of Druzhby during the 11th Five-Year Plan will be introduced on nine additional oil pipelines. [Text] [Moscow IZVESTIYA in Russian 27 Jan 81 p 1] 6521

SURGUT-POLOTSK OIL PIPELINE--The builders of the gigantic Surgut-Polotsk oil pipeline have reached the 3,000-kilometer marker. The last hundred kilometers remained until completion of line work on the length of the entire mainline. The surveyors have now concentrated their efforts on the 800-kilometer segment from Yaroslavl' to Polotsk. Subdivisions of 11 trusts of Minneftegazstroy [Ministry of Construction of Petroleum and Gas Industry Enterprises] are operating here. The daily summary, which gathers information from all sections together, makes it possible to view the final result of each day's work: approximately 100 kilometers remain to be welded, the last 180 kilometers must be insulated and laid in the trench and so on. It seems that the 2,000-kilometer section from Surgut to Gor'kiy was put into operation quite recently on the new transcontinental oil pipeline. An additional 500 kilometers were later added to it from Gorkiy to Yaroslavl'. Hundreds of kilometers of permafrost, swamp and taiga had to be overcome, a pass had to be found through the Ural Mountains and many rivers had to be forded in order to open a path of Siberian oil to the Russian center. Two thousand five hundred kilometers of this gigantic underground river are already in operation. Construction is continuing and even so every step in the path of the builders is difficult. There is not a single kilometer that doesn't have an obstacle and in some places there are two and even three of them. [Excerpt] [Moscow IZVESTIYA in Russian 4 Jan 81 p 1] 6521

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